

BestPractices Steam End User Training

The BestPractices Steam End User Training covers the operation of typical steam systems and discusses methods of system efficiency improvement. The training is designed for end users – at the energy manager, steam system supervisor, engineer, and operations level – who have steam system responsibilities in industrial and institutional plants. The course is divided into three major categories:

- Steam Generation Efficiency
- Resource Utilization Effectiveness
- Steam Distribution System Losses

The course also introduces the major steam opportunity assessment tools developed and utilized by BestPractices Steam. The major text for the End User training is the *Steam System Survey Guide*, a technical reference document developed by BestPractices Steam. Before coming to the End User training, trainees are provided with a copy of the Steam System Scoping Tool (SSST) and they are requested to complete the SSST for their facility before attending the class. The End User training also introduces the Steam System Assessment Tool (SSAT), and a number of the course examples are presented using the SSAT. Finally, the training introduces the 3E Plus insulation appraisal software and a course example is presented that uses this software.

In the *Steam Generation Efficiency* category, the boiler is investigated with the target of obtaining optimum steam generation efficiency. The concept of efficiency is thoroughly investigated and the factors affecting efficiency are identified. Typically, the major avenue of loss associated with boiler operation is energy carried from the system with the flue gas exiting the boiler. Flue gas heat recovery and excess air control are major components associated with managing this loss; these are covered in the course. Other areas of efficiency impact such as, blowdown, water quality and refractory are also covered.

Resource Utilization Effectiveness is a very broad category encompassing fuel selection, combined heat and power systems, steam system balancing and steam end users. These investigation areas can have significant impact on the economics of a facility. Facilities capable of utilizing multiple fuels can realize significant savings as a result of fuel price differences. Combining generating the supply for a site's thermal demand with the electrical demand can result in major increases in overall cost effectiveness. The course covers the basic concepts of combined heat and power systems along with opportunities associated with steam system balancing.

Steam Distribution System Losses can be a major source of loss in a system. Several focus areas are incorporated in this category:

- Steam leaks
- Heat transfer loss through insulation
- Condensate loss